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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,064	01/26/2001	Richard A. Craig	E-1825 CIP	2684

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EXAMINER
PALABRICA, RICARDO J

ART UNIT	PAPER NUMBER
3641	

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/771,064	Applicant(s) CRAIG ET AL.	
	Examiner Rick Palabrica	Art Unit 3641	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *6,10 and 16-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-5,7-9 and 11-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2 and 3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Applicant's invention election, without traverse, of Group I (Apparatus) in Paper No. 5 and species election, with traverse, of fission source, ^{3}He gas proportional counter, and ^{10}B shield in Paper No. 7, is acknowledged.

Applicant's traversal of the species election requirement was on the grounds that the species are "related." Applicant also alleged that a search and examination of all claims would not place a serious burden on the examiner. These reasons are not found persuasive because species belonging to one genus may be related but it does not follow that they are not patentably distinct. Contrary to the requirement in said Office Action, applicant did not submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on record that this is the case. Also, contrary to applicant's allegation, each of the identified species would require a separate search in view of their mutually exclusive characteristics, and these individual searches would not be co-extensive.

The restriction requirement is still deemed proper and is therefore made **FINAL**.

2. Based on Applicant's election, claims 1-5, 7-9, and 11-15 read on the elected species.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-5, 7-9, and 11-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims contain functional phrases or clauses such as the "wherein" clauses in claim 1(b, c), claim 2 and claim 5, the contents of which do not inherently follow from the actual structure recited. Thus, the scope of the claims and/or the metes and bounds thereof cannot be determined. Said clauses accordingly raise a question as to the limiting effect of the language therein on the claims (see MPEP 2106.II.C).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> **A person shall be entitled to a patent unless –**
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 5, 11, 12, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by any one of Hahn (U.S. 3,577,158), Chen (U.S. 3,794,843), Buchanan (U.S. 5,083,029), Gomberg (U.S. 4,864,142), Schultz et al. (U.S. 5,200,626), Ettinger et al. (U.S. 4851,687), Hewitt (U.S. 4,057,729), Kyline et al. (U.S. 3,786,251), Lowery et al. (U.S. 3,492,479) or Skala (U.S. 4,646,068).

Anyone of the above references discloses an apparatus comprising a neutron source, a sensing head comprising a neutron sensor and a neutron shield, and a control

system comprising a timing circuit. Note that the limitation "time-lagged" in claim 1 is a limitation appropriate for the control system rather than the neutron source, as recited. Also, as discussed below, "time-lagged" is a method limitation or statement of intended or desired use, which does not impose a limitation of the above apparatus claims, because it is not a structural limitation. Anyone of the above references either discloses or inherently includes a cable to couple the neutron sensor to the control circuit, and such cable reads on claim language "extension arm" in claim 14.

The claims are replete with statements that are essentially method limitations or statements of intended or desired use. Examples include: "for detecting hydrogenous materials" and "time-lagged" (e.g. see claim 1) and the "wherein" clauses in claims 1, 2 and 5. These clauses, as well as other statements of intended use do not serve to patently distinguish the claimed structure over that of the reference. See *In re Pearson*, 181 USPQ 641; *In re Yanush*, 177 USPQ 705; *In re Finsterwalder*, 168 USPQ 530; *In re Casey*, 152USPQ 235; *In re Otto*, 136 USPQ 458; *Ex parte Masham*, 2 USPQ 2nd 1647.

See also MPEP 2114 that states:

> A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647.
>
> Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531.
>
> [A]pparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ2d 1525,1528.

As set forth in MPEP 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

In any case, any one of the apparatus disclosed in the above references is capable of functioning in the same manner or for the same intended or desired use as the claimed invention. Note that it is only necessary that such capability be present.

5. Claims 3, 4, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ettinger et al. or Hewitt. Either one of these two references further discloses the use of an upper level pulse height discriminator and a ^{252}Cf fission source. Note also the statement in Hewitt that the nuclear electronic modules for amplification, discrimination and counting of neutron pulses from neutron detectors is "standard", i.e., it is well known in the art.

6. Claims 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Schultz et al.

7. Claims 13 is rejected under 35 U.S.C. 102(b) as being anticipated by either one of Hahn or Buchanan.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 3, 4, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Hahn, Chen, Buchanan, Gomberg, Schultz et al., Kyline et al., Lowery et al., or Skala, as applied to claims 1, 2, 5, 11, 12, 14 and 15 above, and further in view of either one of Ettinger et al. or Hewitt. Any one of Hahn, Chen, Buchanan, Gomberg, Schultz et al., Kyline et al., Lowery et al., or Skala disclose the applicant's claims except for the use of an upper level pulse height discriminator and a ^{252}Cf fission source. Either one of Ettinger et al. or Hewitt teach said discriminator and fission source.

One having ordinary skill in the art would have recognized that all references are in the same field of endeavor and the teachings of Ettinger et al. or Hewitt. would apply to the others.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus, as disclosed by any one of Hahn, Chen, Buchanan, Gomberg, Schultz et al., Kyline et al., Lowery et al., or Skala, by the teachings of either one of Ettinger et al. or Hewitt, to include an upper level

discriminator in the control circuit comprising a timing circuit and use ^{252}Cf as neutron source, because such modification is no more than the use of conventional designs/techniques within the nuclear instrumentation art, and the substitution of one neutron source by another well-known neutron source.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Chen, Gomberg, Schultz et al., Ettinger et al., Hewitt, Kyline et al., Lowery et al. or Skala, as applied to claims 1, 2, 5, 11, 12, 14 and 15 above, and further in view of either one of Hahn or Buchanan. Any one of Chen, Gomberg, Schultz et al., Ettinger et al., Hewitt, Kyline et al., Lowery et al., or Skala disclose the applicant's claims except for the use of a neutron shield comprising ^{10}B. Either one of Hahn or Buchanan teach a neutron shield comprising boron.

One having ordinary skill in the art would have recognized that all references are in the same field of endeavor and the teachings of Hahn or Buchanan would apply to the others. Note that the element boron disclosed in Hahn or Buchanan will inherently contain some ^{10}B isotope because this isotope is found in natural boron.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus, as disclosed by any one of Chen, Gomberg, Schultz et al., Ettinger et al., Hewitt, Kyline et al., Lowery et al., or Skala, by the teachings of either one of Hahn or Buchanan, to include a neutron shield comprising a material containing ^{10}B, because such modification is no more than the use of conventional designs/techniques within the nuclear art; and the substitution of one neutron shield material by another well-known neutron shield material.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Hahn, Chen, Buchanan, Gomberg, Schultz et al., Ettinger et al., Hewitt, Kyline et al., Lowery et al. or Skala, as applied to claims 1, 2, 5, 11, 12, 14 and 15 above, and further in view of either the Applicant's own statement in the disclosure or Fenimore et al. (U.S. 4,209,780). Any one of Hahn, Chen, Buchanan, Gomberg, Schultz et al., Ettinger et al., Hewitt, Kyline et al., Lowery et al. or Skala disclose the applicant's claim except for a coded-array aperture for the neutron sensor.

On page 7 lines 17+ of the specification, the applicant discloses that true imaging of neutrons can be achieved by a "coded-aperture camera using the techniques of Vanier and Forman." This statement implies that a coded array aperture for a neutron sensor is well known. In fact, other patents on thermal neutron detection make reference to the work Varnier et al. on thermal neutron imaging (e.g., see Ref. K). Therefore, claim 7 is obvious over any one of Hahn, Chen, Buchanan, Gomberg, Schultz et al., Ettinger et al., Hewitt, Kyline et al., Lowery et al. or Skala.

If the above obviousness is not evident then, Fenimore et al. teach the use of coded aperture imaging with neutron detectors in order to achieve high-resolution images (see column 1, lines 25+ and column 3, lines 45+). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus, as disclosed by any one of Hahn, Chen, Buchanan, Gomberg, Schultz et al., Ettinger et al., Hewitt, Kyline et al., Lowery et al. or Skala.by the teaching of Fenimore et al., to include a coded-array aperture for the neutron sensor, to gain the

advantages thereof (i.e., higher image resolution) because such modification is no more than the use of conventional designs/techniques within the nuclear art.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References L and M further illustrate prior art.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 703-306-5756. The examiner can normally be reached on 7:00-4:30, Mon-Fri; 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 703-306-4198. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

RJP
February 6, 2003